

## Center funds 26 grants for new 2007 projects

The Leopold Center has awarded grants for 26 new projects that support a wide range of activities from custom grazing and grass-based dairies to the financial and technical challenges faced by farmers interested in accessing niche food markets.

The 26 new projects total \$549,456 for the first year of work, and were selected from 69 preproposals submitted to the Center in August 2006. The Center also has renewed or is in the process of renewing grants for 20 multi-year projects that are in progress.

"These projects show the Center's response to emerging issues and trends in agriculture and represent a rich diversity

of ideas and projects throughout Iowa," said Director Jerry DeWitt.

DeWitt said the Center's call for project ideas included an emphasis on the growing interest in grass-based and organic dairies. "We wanted to address the production, infrastructure and policy aspects of these systems, which can help protect the land as well as supply the demand for products in these new markets," he added. "I think we'll have some excellent work to showcase in this area."

The Center is funding three dairy projects that will provide technical assistance for new and beginning grass-based

**GRANTS** (continued on page 4)

## Agroecology work fuels landscape change; current interests turn to biomass

By ANNE LARSON, *Special to the Leopold Center*

One of Nature's lessons is "everything in its own time." Among the most successful efforts supported by the Leopold Center in its first 20 years are conservation practices that prove the wisdom of that lesson.

The nationally-touted Bear Creek riparian (streamside) buffers are now the object of research on the timely issue of biomass production, fueling even greater interest in the soil-saving, nutrient-trapping buffers.

The project grew from researchers' recognition of the need to reduce nonpoint source (NPS) pollution, while adding woody biomass to the farmer's suite of cash crops. Funded by the Leopold Center from 1990 to 2002, the project continues to research soil, water quality, nutrient management, watershed improvement

and wildlife habitat implications of the buffers.

The Leopold Center's interdisciplinary Agroecology Research Team studied the economic, agronomic, biological and sociological impacts of conservation practices. The significant NPS pollution reduction that resulted from buffers quickly became apparent, and garnered recognition from regional and national conservation and environmental organizations.

On the other hand, Dick Schultz, professor and researcher in the Iowa State University Department of Natural Resource Ecology and Management (NREM), says that when the project began, analyses showed that markets for biomass just weren't there. Now, 17 years

**AGROECOLOGY** (continued on page 8)

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LEOPOLD CENTER

#### LEOPOLD LETTER MISSION

The mission of the Leopold Letter is to inform diverse audiences about Leopold Center programs and activities; to encourage increased interest in and use of sustainable farming practices and market opportunities for sustainable products; and to stimulate public discussion about sustainable agriculture in Iowa and the nation.

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The Leopold Center for Sustainable Agriculture seeks to identify and reduce adverse socioeconomic and environmental impacts of farming practices, develop profitable farming systems that conserve natural resources, and create educational programs with the ISU Extension Service. It was founded by the 1987 Iowa Groundwater Protection Act. The *Leopold Letter* is available free from the Leopold Center at 209 Curtiss Hall, Iowa State University, Ames, Iowa 50011-1050; (515) 294-3711.



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## Annual report: Balancing change, sustainability

The Leopold Center's new annual report reflects the twin themes of FY2006: soldiering on in the midst of change and adopting a bold and balanced approach to achieving sustainability.


The 40-page illustrated document offers readers a comprehensive look at the activities, outreach, demonstrations and research projects conducted or supported by the Center from July 2005 through June 2006. Readers of the report will learn about the exciting work done by the research initiatives in ecology, policy, and marketing and food systems. Numerous, tightly focused research projects as well as challenging special projects were sponsored by the initiatives. All three initiatives also supported education and outreach efforts on the ISU campus and around Iowa.

The report features information on the Center's long-term commitment to organic agriculture research conducted by Iowa State University and its continuing support of on-farm research carried out with Practical Farmers of Iowa. The Center also contributes to a burgeoning ISU project on agroecology, the state's budding grape and wine program, and is actively involved in plans for making an environmental show-

case of west central Iowa's Whiterock Conservancy.

Fred Kirschenmann offers a look at his work as the Center's first Distinguished Fellow – providing guidance and assistance to the Agriculture of the Middle project, the Pew Commission, Silos and Smokestacks, and the nation's other sustainable agriculture centers.

Center editor Mary Adams and Julie Mangels of Juls Design, Ankeny, Iowa, collaborated on the production of the report. Mangels selected a unique new paper stock for the publication. Her choice, Mohawk Via Smooth paper, was manufactured entirely with non-polluting, wind-generated energy and contains 30 percent post-consumer recycled fiber. The paper is certified Green Seal, and a statement from Mohawk Paper lists the environmental savings involved in printing of the Center's annual report.

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Leopold Center annual report:  
[www.leopold.iastate.edu/pubs/annual/files/AR\\_05-06.pdf](http://www.leopold.iastate.edu/pubs/annual/files/AR_05-06.pdf)

Or request a copy, (515) 294-3711,  
[leocenter@iastate.edu](mailto:leocenter@iastate.edu)

## News & Notes

Leopold Center Distinguished Fellow Fred Kirschenmann has written an article published in the March/April issue of *Agronomy Journal* that looks at what might follow the current energy-intensive production system in agriculture. He writes that farms of the future will conserve energy by relying on synergies created by biological diversity. The article, which outlines eight guiding principles for farms of the future, is entitled, "Potential for a New Generation of Biodiversity in Agroecosystems of the Future." An abstract is available online at: <http://agron.sci journals.org/cgi/content/abstract/99/2/373>.

The story of good eating in Iowa as told through Dutch letters, popcorn, creamy Maytag blue cheese and other foods is now just a click away. Iowa Arts Council Folklife Coordinator Riki Saltzman has developed a web site about place-based

Iowa foods – highly differentiated food products with strong ties to where and/or how they are grown or processed. The site is at: [www.iowaartscouncil.org/programs/folk-and-traditional-arts/place\\_based\\_foods/index.htm](http://www.iowaartscouncil.org/programs/folk-and-traditional-arts/place_based_foods/index.htm), and includes audio, photographs, and downloadable documents. Saltzman's project began in 2005 as a competitive grant from the Center's Marketing and Food Systems Initiative. The web site also offers a list of locations where the foods can be purchased.

Leopold Center Marketing and Food System Initiative leader Rich Pirog, who wrote the Center's often-cited "food miles" report, was quoted in the February issue of *American Way*, an in-flight magazine published by American Airlines. The article noted the growing number of "locavores," a term coined by San Francisco bookstore manager Sage Van Wing.

# q&a

## A conversation with Director Jerry DeWitt



### Q. Why is it important to celebrate the 20th anniversary of the Iowa Groundwater Protection Act?

The Leopold Center has chosen to celebrate this significant event (that among other things, established the Center) to remind Iowans that the job is not done. What we began in 1987 – to focus on improving Iowa's water quality – remains a critical item on the state's agenda. This is a task that needs everyone – farmers, researchers, educators, consumers and many partners – to share in the work.

One does not need to look far to find a problem or situation that challenges the long-term sustainability of Iowa's precious natural resources, its soil and water. As these challenges arise, ultimately our landscapes, communities and people will experience the impacts.

This connection between land and people is real. The desire at the Leopold Center is to create more visibility and focus attention on those challenges and opportunities that we face on a daily basis even after 20 years. We believe that our role is to bring forth these issues, debate workable alternatives, find common ground, and provide reasonable approaches for practices and strategies that offer hope and the prospect of success for Iowans.

### Q. How is the Leopold Center celebrating this milestone?

A two-day event in July is only one part of our 20th anniversary celebration in 2007. An active group of Iowans, led by former Leopold Center director Dennis Keeney and former advisory board chair and Villisca farmer David Williams, has helped the Leopold Center become part of various partner activities throughout the year. Thanks to the work of this group, the Leopold Center has been involved in a special event every month in 2007. To date, the Leopold Center was honored by Practical Farmers of Iowa in January and the Iowa Network for Community Agriculture in Febru-

ary. We also hosted a breakfast reception for members of the Iowa General Assembly in March, and in April we will welcome Wendell Berry to Ames.

Watch for announcements of other monthly events such as dinners, seminars and field days on our anniversary web page. On-line registration for our July event will be available in May at this web site address.

### Q. What is being planned for July?

Mark July 10-11 on your calendar! July 11 will be our 20th anniversary celebration, what we're calling our "signature" event, at the Scheman Building on the Iowa State University campus. We expect a big crowd, thoughtful dialogue and challenging presentations from partners and friends.

The anniversary conference on Wednesday, July 11 will do more than look back over the past 20 years. We're also using this event as a prime opportunity to look ahead to the still unmet challenges that impact our water, land and rural communities across Iowa. Yes, we will take note of some of our past accomplishments and be reminded of groundwork laid by early investments of the Leopold Center. However, we want to focus more on what remains on the near horizon, those challenges and opportunities, and how we can move to achieve additional measurable impacts. Conference participants will be asked to look toward the future and help frame approaches for our next 20 years and beyond.

The conference will be preceded by a day of field tours on July 10. These tours are optional, offering a unique experience for those who want to spend additional time in the field and with Iowans. Buses will carry us to several locations where we can interact and also touch, feel and maybe taste the work that has been accomplished by the Leopold Center and its partners.

But the real excitement will take place July 11. There we will delve into the tasks at hand during sessions scheduled according to four interest tracks: natural resources, people on the land, the emerging bioeconomy, and food and health.

Don't expect typical presentations, the standard "talking heads" or the usual conference fare. We are looking at a variety of approaches to better engage everyone. The Leopold Center's work over the past 20 years has been anything but business-as-usual; likewise with the celebration.

See you then.



*Penny Brown Huber holds an anniversary cake for Jerry DeWitt and Rich Pirog, while Matt Russell (second from left) and Senator Tom Harkin (D-Ia) look on during the Iowa Network for a Community Agriculture conference.*

*Photo by Lisa Purvis*

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Read about the anniversary:  
[www.leopold.iastate.edu/anniversary.htm](http://www.leopold.iastate.edu/anniversary.htm)



## 2007 Leopold Center Competitive Grants

### New Grass-based/Organic Dairy projects

- Developing organic/grass-based dairies in southwest and southern Iowa
- Expanding grass-based organic dairy enterprises among southeastern Iowa farmers
- Sustainable economic development through organic and grazing dairy farm establishment and transition

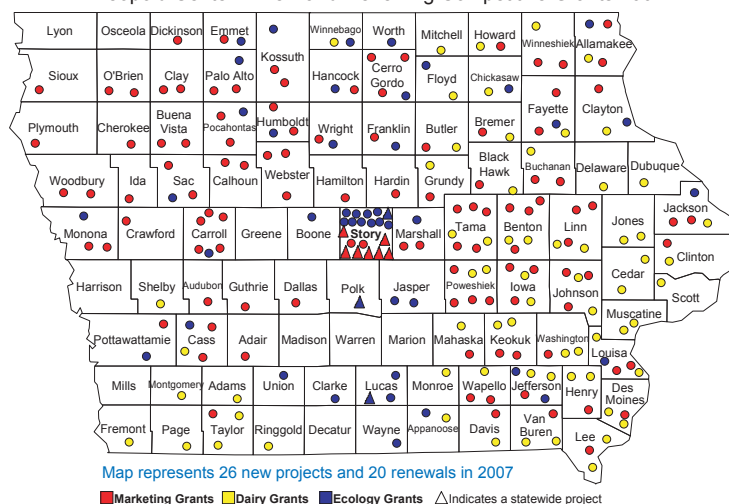
### New Marketing and Food Systems Initiative grants

- Building a direct-to-consumer food distribution system in Iowa
- Cash flow and product profitability analysis and improvement for small meat processors
- Development of a niche agriculture small business money map and process to disseminate information
- Effects of ambient temperature and transportation distance on the resulting pork quality
- Enhancing the sustainability of the University of Iowa food system: A factor-10 approach
- Food product demand mapping
- High tunnel production and distribution model for produce
- Investigating the feasibility of establishing food processing and distribution centers for western Iowa
- Iowa Grasslands Products Calculator
- Is the meat goat enterprise profitable and sustainable?
- New champions expanded scope: Developing an action plan for building an expanded regional food economy in Black Hawk and surrounding counties
- Organic agriculture program viability study
- Researching and evaluating an effective web-based local food sales template
- Safe food handling on the farm: Foodservice operations' expectations
- A system to operate greenhouses and aquaculture in conjunction with Iowa's ethanol plants
- Strengthening the local and regional food system in the Iowa Valley

### New Ecology Initiative grants

- Adapting land retirement programs in response to Iowa's changing agricultural economy
- Agronomic, ecological and economic comparisons of conventional and low-external-input cropping systems
- Custom grazing in Iowa
- Iowa recreational property ownership: Identification, contact and social dynamics of multiple use perennial landcover
- Quantifying the role of perennial vegetation in removing nitrate from groundwater in riparian buffers
- Screening winter triticale cultivars and breeding lines for forage and biomass production
- Soil moisture dynamics and plant transpiration under contrasting annual-perennial cover types

Leopold Center -- New and Renewing Competitive Grants 2007



## NEW PROJECTS INCLUDE 16 MARKETING, 7 IN ECOLOGY INITIATIVES

**GRANTS** (continued from page 1)

or organic dairy farmers throughout the state. In southern and southwest Iowa, the Leopold Center is funding work through a collaboration including the Iowa Institute for Cooperatives, Clarinda Economic Development, ISU Extension and the GROW Iowa Foundation. The Iowa Valley RC&D will coordinate dairy efforts in southeastern Iowa, and ISU Extension dairy field specialists will work with dairy farmers in northeast Iowa.

The 2007 grants also include 16 new projects in the Marketing and Food Systems Initiative. Three of the new projects will develop business models for food distribution and processing, while another project will research and test a web-based food-purchasing template for use by farmer networks. Other projects include development of an on-line Iowa Grassland Products Calculator, cash flow and profitability analysis for small meat processors, and a feasibility study for an organic education program in northwest Iowa.

Seven new grants are part of the Ecology Initiative, including two research projects on changing land use and custom grazing. One project will investigate effective ways to contact out-of-state landowners to explore land use options for their property. In a second project, Practical Farmers of Iowa in conjunction with ISU Extension will review custom grazing contracts and host a series of workshops and field days to discuss successful models for custom grazing in Iowa. They also will develop an Iowa Custom Graziers Directory with additional information for farmers.

Other Ecology Initiative projects include preparation of a white paper exploring policy options for CRP and other types of land retirement, research on the potential for perennials to remove nitrate from groundwater in streamside buffers, development of winter triticale cultivars for forage and biomass production, and low-external-input cropping systems.



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Project descriptions linked to marketing, ecology pages:  
[www.leopold.iastate.edu/research/marketing.htm](http://www.leopold.iastate.edu/research/marketing.htm)  
[www.leopold.iastate.edu/research/ecology.htm](http://www.leopold.iastate.edu/research/ecology.htm)

Color map of project locations:  
[www.leopold.iastate.edu/research/grantees/map.pdf](http://www.leopold.iastate.edu/research/grantees/map.pdf)



## Managing with less Part II: Reinventing the human

*Obligations have no meaning without conscience, and the problem we face is the extension of the social conscience from people to land. One basic weakness in a conservation system based wholly on economic motives is that most members of the land community have no economic value. — Aldo Leopold*

Aldo Leopold recognized almost 60 years ago that the ecological damage we are doing to the land community will not stop unless we reinvent ourselves. Continuing to see ourselves as “conquerors” of the land community will always detract from appropriate land use.

Assuming that economic self-interest or government regulation will somehow lead to suitable conservation also is an illusion. Large segments of our ecological landscape have no immediate economic value, but are essential to long-term ecological health. Therefore, Leopold’s “land ethic” founded on an “ecological conscience” is essential to our survival on the planet. Technological and economic cleverness need to be guided by ecological wisdom.

Perhaps in Leopold’s day we still had the luxury of time to debate his proposition. Now we have reached a point where the time for debate is over and the time for action is imminent. Our relentless pursuit of an extractive economy has mined our natural resources, depleted our biodiversity, and overwhelmed nature’s natural sinks with our wastes to a point where it now threatens the planet’s basic functions. The resilience of our oceans (which support over 90 percent of the livable habitat of the planet, absorb much of the carbon and supply 70 percent of the oxygen we breathe) has been compromised. We are using up groundwater faster than nature can replenish it. And we are releasing greenhouse gases into the atmosphere at a rate that threatens to dramatically change earth’s climate, inviting another period of mass extinction.

Jim Hansen, one of our most distinguished climatologists with NASA’s Goddard Institute for Space Studies in New York City, pointed out a year ago that we had about ten years left to make major changes if we want to avoid that outcome. That means we now have nine years left.

All of this ecological damage, the fact that it is caused by human activity and that we have little time to change course if we are to prevent a major global meltdown, is well documented and no longer questioned by any serious scientist. Yet we have done precious little to address the problem. The reason is not that we lack the information to change course, it is that we lack the will. We have convinced ourselves that we can only maintain our quality of life by expanding our role as “conquerors” of nature, and by perpetuating our obsession with the notion that only the creation of wealth can ensure well-being.

This leaves us with only one conclusion – we need to reinvent the human. We must now transform ourselves from a species that believes it can continue to exploit the planet for our personal gain, to a species that lives in a mutually beneficial manner with the rest of the planet’s rich biotic community.

We must, in other words, recognize that we are but “plain members and citizens” (as Leopold put it) of a rich, diverse, inter-

dependent, self-regulating and self-renewing biotic community. The well-being of this community is absolutely essential to our own well-being. Exploiting that community to enrich ourselves is a fool’s errand.

### A two-fold delusion

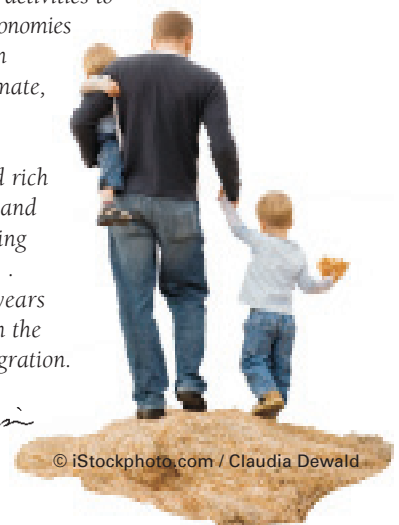
Perhaps the greatest barrier to making this transition is a two-fold delusion that we seem incapable of shedding. First is the false belief that our extractive economy is sustainable. The second is our flawed notion that quality of life is tightly linked to wealth expansion. We persist in both delusions despite all evidence to the contrary.

Numerous studies have now shown that as our collective wealth has increased dramatically in recent decades, most indicators of our well-being actually have declined. And anyone who still believes that we can continue to indefinitely draw down our ecological capital and “externalize” our wastes without dire consequences is just not paying attention.

Ironically, we have many concrete examples of different ways to live. Gary Gardner’s new book from the Worldwatch Institute, *Inspiring Progress* (2006, W.W. Norton), provides us with numerous examples of how we can reinvent ourselves to actually sustain a better quality of life and begin restoring our ecological capital in the process. The key argument of his book, as he puts it, is that

*... the impressive creativity of the 20th century lacked a strong set of ethical boundaries that could sustain progress over the long term and orient it toward prosperity for all. Human creativity was like a river without banks, the flow of innovation impressive but unchanneled. One missing riverbank was ecological wisdom, which might have helped us design human activities to work in step with nature. We built economies that were resource intensive, with an unprecedented toll on air, water, climate, and non-human species. The other absent bank was an ethic of human well-being, which might have helped rich and poor alike build more dignified and fulfilling lives ... Without the guiding wisdom of ecology and well-being ... [precisely Leopold’s urging over 50 years ago] ... human cleverness has sown the seeds of economic and social disintegration.*

*Stephen K. Schneider*



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# Dynamic duo: Fire, grazing unite for land care

By ANNE LARSON, Special to the Leopold Center

Answers for the future of grazing in Iowa may be found in the historic interaction of fire and grazing on America's native prairies.

Iowa State University researchers currently are looking at ways to manage Iowa's private and public grasslands with this "dynamic duo," thanks to \$21,000 from the Leopold Center Ecology Initiative that has leveraged nearly a million dollars worth of support for ongoing study. The Iowa Department of Natural Resources State Wildlife program has provided a \$424,400 grant specific to fire and grazing. The U.S. Department of Agriculture's National Research Initiative has contributed nearly \$500,000 focused on related work. The initial project also was supported by the Joint Fire Sciences Program and ISU's College of Agriculture.

Much like an early American landscape grazed by bison, areas most recently burned offer the most appealing forage for grazing, while those later in the burn cycle are avoided by cattle (see accompanying graphic). By following a three-year cycle to burn three to six areas within a pasture, managers do not need to maintain fences; livestock move from one grazing area to another based on the burn cycle.

## New path for grazing

No doubt, it's a different way to look at grazing. Rather than trying to improve harvest efficiency through minimizing forbs and ungrazed grasses in a pasture, the patchwork, fire-grazing interaction approach focuses on enhancing the presence of native species and expanding the complexity of the grassland make-up. The result, as described by the researchers, is a pasture that has more internal variability within a pasture as well as more stability in a landscape view.

ISU researchers working on this concept are Dave Engle, who leads the ISU Department of Natural Resource Ecology and

Management (NREM), colleague James Miller (with a dual appointment in the ISU Department of Landscape Architecture) and Diane Debinski, ISU Department of Ecology and Evolutionary Biology. They recently completed preliminary work that laid the groundwork for research that will show whether using burning in conjunction with grazing (the fire-grazing interaction) can benefit the cattle industry, improve native species habitat, and address wildfire concerns on preserves and privately-owned grazing land.

As described by Miller and Engle, "Grasslands that have not been grazed or burned in several years have a higher probability of fire and lower probability of grazing, and grasslands that have recently been burned have a higher probability of being grazed and lower probability of burning until fuel can accumulate."

## Patterned after Oklahoma work

Research in Oklahoma shows that heavy grazing after a patch-burn has no negative influence on bison, and might be an important tool to enhance nutrient intake during winter. Engle's earlier research while at Oklahoma State University showed that domestic cattle respond to the patch burning regime by grazing recently burned patches 75 percent of the time. Three separate studies in Oklahoma evaluating performance of domestic stocker cattle and cow-calf pairs indicate livestock performance equivalent to that of traditionally managed pasture.

Grassland bird populations often are used as indicators of ecosystem integrity because of their diverse habitat requirements. Their preferences vary from minimal vegetation cover to areas with dense vegetation and litter. The patch-burning/grazing regimen lends itself to diverse habitats, which in turn can appeal to a variety of species with varying habitat needs. Likewise, invertebrates such as butterflies are attracted to varying vegetation patterns.

Twelve areas in and near Ringgold County in south central Iowa will be targeted in the current study. Since grassland and grazing occupy a great deal of the southern Iowa landscape,



*Bison in Oklahoma graze recently burned areas that provide a surge of nutritious foliage. Research has shown domestic cattle act in similar ways – recently burned areas are grazed about 75 percent of the time; taller areas (not burned as recently) are left alone.*

this area is ripe for research. The parcels on which the burns will occur include the IDNR Ringgold and Kellerton Wildlife Management areas, on private properties in Ringgold County, and on the Missouri Department of Conservation's Pawnee Prairie Preserve across the state line in Harrison County, Missouri. Patch burns will begin when snow cover dissipates this spring.

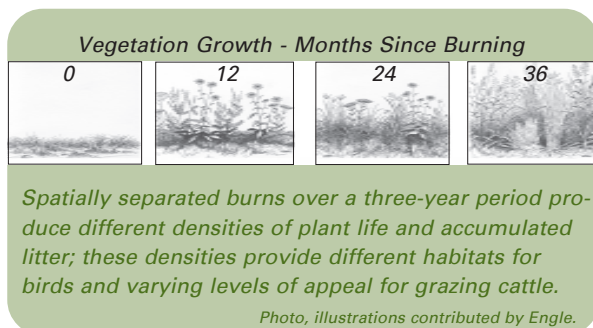
## Iowa research begins

Grazed pastures were fenced in 2006 and stocked at a moderate rate (1.25 animal unit months per acre). No fertilizer or herbicide will be used in any of the pastures under study. Baseline surveys of bird populations, vegetation, insects, fuel-loads and cattle trails were made. Measurements will be made against this baseline during the course of the project.

Miller and Engle were intrigued by some results of the initial surveys:

1. Eight species of birds entirely dependent on grasslands were observed, as well as ten species that use the grasslands as a part of a larger array of habitats.
2. Pastures, including those that initially appeared devoid of native plants, proved to have many prairie plant species, both grasses and forbs, which are believed to respond well to patch-burn-grassing management.
3. A surprising number of landowners were open to considering alternative management practices.

Miller and Engle have built a number of partnerships and done considerable outreach during this first year, which holds promise for the future of the project. They also hope to integrate a sociological study on the landowner's decision-making process regarding adoption of grazing and fire management.



## Sustainable biofuels: A new challenge for the Leopold Center

By DENNIS KEENEY Guest columnist



Iowans would have to be living in a cave not to be caught up in the news hype about how turning much of our corn into ethanol promises to move us toward energy independence. But what are the possible risks? First, there is not enough corn available to feed ethanol plants, livestock (beef, swine, dairy and poultry), export markets and other myriad uses of this miracle grain. Secondly, this rush has the potential to cause serious environmental and social damage and will provide little benefit to rural communities.



By the time the corn-based ethanol rush has peaked, we could well see an increase of 12 million corn acres nationwide, perhaps up to 1 million more acres just in Iowa. Iowa has the potential to approach a corn monoculture, with the resulting issues of increased pests and diseases and the loss of biodiversity associated with a monoculture. Further, greatly increased nitrogen fertilizer use will accelerate nitrogen loss to the Gulf of Mexico, resulting in more hypoxia. Soil erosion would be greatly increased, particularly on the Conservation Reserve Program acres that will go under the plow in the coming years.

Already, land values and land rents are increasing, as are input costs. The profits of \$4 corn soon will be eaten up with the greater expenses. And opportunities for beginning farmers will decline as farm size increases.

This impending social, ecological and economic disaster can be avoided with policies that move us toward perennial biofuels (grasses and trees). These crops, if produced in a sustainable manner, offer large benefits to local economies. The environmental and economic benefits are clear: cellulosic feedstocks from perennials have far higher energy return than corn-

based ethanol, and have proven environmental and biodiversity benefits. Mixed swards of grasses would have more stability and would stretch out the harvest time.

Biomass is a bulky, low-density material that costs more to transport per energy unit than corn. Economics dictate it will have to be processed locally in small volume refineries, contributing greatly to local economies. Studies indicate that biomass, unlike ethanol, will produce far more energy than is required for its production, and its use releases far less carbon dioxide – the main greenhouse gas – for a given amount of energy than do gasoline, coal or corn-based ethanol. In addition to liquid fuels, biomass offers other opportunities for increased energy such as production of synthetic gas, heat and electricity.

The benefits of biomass will not accrue without research and development to establish perennials on the land and policies in our government that support sustainably-produced biofuels. Should the industry concentrate, for example, on crop residues such as corn stalks, erosion would be enhanced and the corn monoculture continued. Ownership of refineries should be local, keeping profits within the community.

The research needed to develop economical biorefineries is just getting started, and it will probably be a decade before the technologies are widely adopted. But now is the time to develop the needed cropping systems. The Leopold

Center can be a primary catalyst for creating sustainable biomass cropping systems in Iowa. Long-term teams with a broad mix of economists, farmers and scientists will help research and guide programs underway at Iowa State. These teams also will add a unique twist, combining the Center's credibility within the sustainable agriculture community with other farmers who could benefit from these cropping systems.

The Center could greatly aid the progress of sustainable biofuels by developing sustainable standards for cellulosic ethanol including low-input fossil fuels for growing, harvesting and processing the materials; maintaining and increasing biodiversity; minimizing erosion; and providing benefits for rural communities. Continued attention will need to be paid to nutrient balances, and critical issues such as harvesting to maximize wildlife habitat.

Biofuels are never going to provide energy independence. Even if we approach the 60 billion gallons per year suggested as a renewable fuel standard for 2030, the nation's transportation fuel use is predicted to rise to a staggering 290 billion gallons per year. Conservation will be absolutely necessary to get the nation on a road to energy independence. That policy, which seems so necessary, is one which the nation – in fact, the world – does not seem to be able to embrace.

### The way it was, 1987-1999

Sources and systems for renewable energy occupy our attention now, but in the Leopold Center's early days our task also was huge: helping to define the concept of sustainability in agriculture.

I was constantly asked for a definition of sustainable agriculture. All I would say was, "Watch us and others like us." The term carried a lot of baggage, in part as a result of bombardment of the ag media by establishment farm, trade and industry groups. They used terms such as organic agriculture in a derogatory way, having no idea of the larger picture.

Some states picked softer names for their programs, such as Integrated Ag Studies, but we stayed the course. Fortunately, Iowa State University faculty embraced the Center and we had outstanding working relationships once they saw the Center would be science-based.

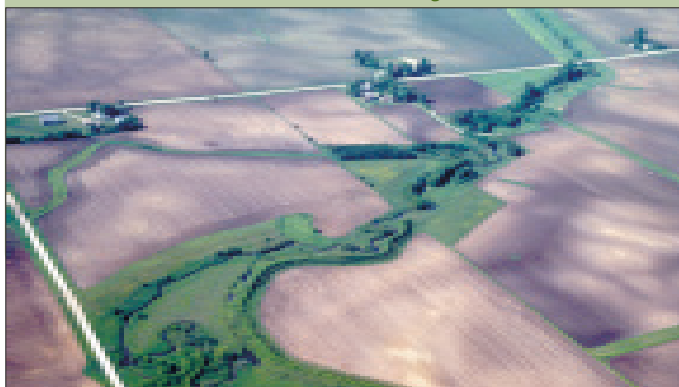
KEENEY (continued on page 9)

*Dennis Keeney was the first director at the Leopold Center from 1987 to 1999. Now a Professor Emeritus at Iowa State University, Keeney is Senior Fellow for the Institute for Agriculture and Trade Policy in Minneapolis, Minnesota.*

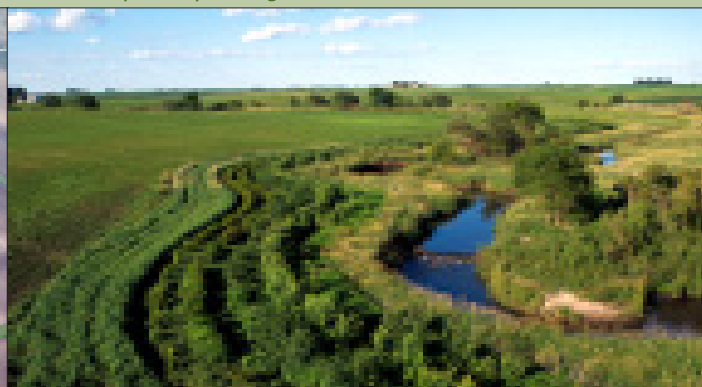


## Bear Creek buffer project, a Leopold Center success story

*Aerial view of streamside buffers along Bear Creek.*



*Multi-species plantings on streamside buffer.*



### INCREASED CORN PRODUCTION MAKES STREAMSIDE BUFFERS MORE IMPORTANT

**AGROECOLOGY** (continued from page 1)

later, the silver maple, green ash, willow and poplar planted on the Bear Creek buffer strips have matured and can offer another avenue for research on the economic viability of generating income from biomass. As Schultz and his colleagues continue their efforts, they will be quantifying the potential of buffers for carbon sequestration and use in the burgeoning bio-energy field.

Such intense interest in bioeconomy opportunities may cause some acres to come out of Conservation Reserve Program (CRP) set-aside. "If more land is used for corn after corn for ethanol production," Schultz says, "the existence of streamside buffers will become even more important." So not only will the riparian filters potentially be part of the energy generation mix, they also may help ameliorate increased nonpoint source pollution.

#### Where the effort began

The Agroecology team concept was approved by the Leopold Center's Advisory Board in 1988, and the team began work in 1990. The group, led by Schultz and Professor Emeritus Bruce Menzel, set out three goals:

1. To assess the impact of agriculture on the structure and function of regional agroecosystems,
2. To design and test small-scale agricultural landscape management systems that could reduce the negative impacts and improve natural ecosystems, and
3. To develop a holistic approach for management of regional agroecosystems that were environmentally sound, socially acceptable, and economically feasible.

Two watersheds were part of the early work: Storm Lake in Buena Vista County and Bear Creek in Story County. Work included using geographic information systems for assessing the landscape, monitoring water quality, surveying farmers and residents for socioeconomic information, and designing and testing buffer strips.

At the time, the buffer system installed on Ron Risdal's farm was one of the few such restorations in the United States. The buffer design consisted of five rows of trees, two rows of shrubs, and a 24-foot swath of switchgrass. The idea was that fast-growing tree species could be harvested for biomass in short rotations of ten to 20 years, depending on the species. These species,

which can resprout from the trunk, can be harvested three to four times before productivity decreases. The harvesting of the aboveground biomass also serves to remove the chemicals that are stored in the plants. The buffer design includes a small constructed wetland that intercepts and filters pollutants and examples of streambank bioengineering that stabilize eroding banks.

#### Accomplishments

In 1998, the Bear Creek riparian management project became one of 12 National Agricultural Restoration Demonstration sites identified by the U.S. Department of Agriculture. Countless tours have been conducted at Bear Creek by leaders of more than 50 conservation and farm organizations in Iowa and 30 countries abroad.

Since the inception of the Bear Creek project, more than 64,000 acres bordering Iowa streams have been protected by buffers. Iowa ranks third among all states in use of the riparian buffers, and accounts for 8 percent of all the acres currently classified by USDA as protecting streams. Many of those buffers are funded from the continuous CRP signup program. In the Bear Creek area alone, more than 15 landowners have installed woody and grass buffers since the pioneering efforts on Risdal's farm.

Drawing on the early successes of Bear Creek, the Iowa Buffer Initiative was formed to encourage increased use of the practice along Iowa streams. The program, credited with spurring CRP sign-up by nearly 28 percent, was led by Iowa-based Trees Forever and sponsored by Novartis Crop Protection, the Iowa Farm Bureau Federation, Iowa Department of Natural Resources, the Environmental Protection Agency, Natural Resources Conservation Service, the ISU NREM department and the Leopold Center.

Research indicates that soil organic matter carbon and soil infiltration rates can increase in a relatively short time after the establishment of perennial vegetation in a multispecies riparian buffer.

**AGROECOLOGY** (continued on page 9)



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Buffer photo gallery, fact sheets:  
[www.buffer.forestry.iastate.edu](http://www.buffer.forestry.iastate.edu)

Learn of other accomplishments:  
[www.leopold.iastate.edu/pubs/nwl/2007/2007-1-leoletter/buffers.htm](http://www.leopold.iastate.edu/pubs/nwl/2007/2007-1-leoletter/buffers.htm)





**BEFORE:** This picture of the Risdal farm was taken in 1990 before the streamside buffer was planted.



**AFTER:** This picture of the Risdal farm was taken in 1994, the fourth season for the buffer. This site is now a USDA National Research and Demonstration area in Story County.

*Photos by Dick Schultz.*

## SUSTAINABLE AGRICULTURE GAINS ACCEPTANCE, BUT MANY ISSUES REMAIN

**KEENEY** (continued from page 7)

Environmental issues then centered largely on groundwater pollution by nitrate and pesticides. Thanks to seminal work by George Hallberg and his colleagues at Big Spring, it was shown that agriculture was the source of much of the nitrate in groundwater. That was met with a lot of denial by the industry. Monsanto was just starting its bioengineering field trials with glyphosate-tolerant soybeans, heralding a revolution in the seed industry that continues today.

The swine industry was restructuring to the confinement model that dominates it today. This created a lot of tension and concern over social, economic and environmental issues.

In many ways, the farmers were ahead of us. Practical Farmers of Iowa was moving fast on controlled grazing, and we had to catch up. They began looking at hoop houses for swine, and started practical fertilizer trials to determine the best application rates of nitrogen. And they realized before we did that local foods offered so many advantages to the local community.

Looking back, some things have changed and some have stayed the same. We still export a lot of nitrogen to the Gulf of Mexico, and atrazine is still present in ground and surface waters. The swine industry is largely restructured, but more and more people recognize the environmental and social benefits of raising livestock in animal-friendly conditions. Food is more important now, and farmers markets, locally-sourced foods for restaurants and organic sections in supermarkets are common. Soybeans and much of the corn grown now are genetically engineered.

Sustainable agriculture is an accepted, mainstream idea, with coursework, majors in land grant universities and steady funding sources from USDA and many prominent foundations.

When I started at the Center, I said the work would be a journey. It still is.

## BUFFERS SHOWN TO ENHANCE WILDLIFE HABITAT, IMPROVE WATER QUALITY

**AGROECOLOGY** (continued from page 8)

These changes should increase the ability of the buffer's soil to process non-point source pollutants. Data also have shown that buffers can cut sediment in surface runoff by 90 percent, cut nitrogen and phosphorus in runoff by 80 percent and remove up to 90 percent of groundwater nitrate. Importantly, streambank stability is greatly improved by the practice.

In a song bird survey in the Bear Creek Watershed, narrow cool-season grass and weed strips typically left along unbuffered streams contained nine common species while a ten-year-old riparian forest buffer contained 43 species. Game species such as pheasants are present in large numbers making the buffers prime hunting areas. Aquatic life also has flourished in the

protected streams.

CRP payments, wildlife enhancement and water quality improvement might be reasons enough for landowners to install the buffers. Now that the bio-fuels industry is on the verge of blossoming in Iowa, adding biomass crops to the farmer's palette seems destined to seal the deal.



### Local foods on campus

Iowa State University staff and students may be seeing more local and organic foods on campus menus. ISU Dining Director Nancy Levandowski discussed her plans with more than 40 farmers and local food group leaders at a meeting February 28. Organizers included the Leopold Center, Practical Farmers of Iowa, the Iowa Network for Community Agriculture and the Iowa Farmers Union. The university hopes to have 35 percent of its food purchases supporting sustainability and Iowa farmers by 2012. The Leopold Center will work with ISU Dining and farm group partners to help realize this goal. ISU Dining operates three residential dining centers, four food convenience stores and 11 cafes and restaurants and a catering service.

# Food projects yield new insight, tools for farmers

By ANNE LARSON, Special to the Leopold Center



Two projects originating from Iowa State University's program of Hotel, Restaurant and Institution Management (HRIM) have shed light on the attitudes and needs of Iowa chefs and producers of local food. As part of one project, researchers also generated an on-line calculator that will help producers make better decisions about how to market their produce.

Recently completed work funded by the Leopold Center's Marketing and Food Systems Initiative looked at the costs and decision-making processes of independent restaurateurs, local food producers and restaurant patrons. The projects have laid the groundwork for future research and helped researchers fine-tune their tools to gather better information.

Surveys of central Iowa chefs, producers and restaurant patrons were part of a two-year project led by Amit Sharma, a former Iowa State University (ISU) researcher, and Catherine Strohbahn, who still is with HRIM. Strohbahn also worked on a project led by Jason Ellis, also formerly of ISU, that explored using contracts to expand produce market opportunities. One of the products of the second study is a web-based calculator that can help producers decide whether contracting with foodservice operators is profitable.

The calculator was introduced at a series of meetings in March that focused on selling to foodservice and retail markets and were cosponsored by the Leopold Center. The tool is already available on the web.

According to Strohbahn, the intent of the calculator is to "provide producers with a tool that will help them in making a decision as to whether to contract with a foodservice operation for a set period of time or product amount."

She explains that producers can create scenarios with various data sets to assist in making decisions about what and how much to plant as well as sales decisions such as how, where, when and price.

## Procurement, production evaluated

The surveys of central Iowa chefs included ten restaurants that have some experience using locally sourced foods. Several aspects of the restaurant-producer relationship were explored, including the costs of purchasing, receiving, pre-preparation and preparation.

Additionally, ten producers who have experience supplying food to independent restaurants were interviewed about the benefit and cost differences between selling to restaurants versus other marketing outlets.

Finally, an experiment offering ISU HRIM Tearoom patrons a choice of a "typical" versus "locally sourced" main entrée showed consumer willingness to pay price premiums of up to \$2.

While the surveys were limited, they will help researchers refine methods for future studies of these groups. Sharma says that there was mixed enthusiasm from both restaurant operators and producers, "but producers appeared slightly more enthusiastic about the project." He said, "There were some chefs that were very committed to the concept of local food use, but this was not widespread among all restaurants."

Surveys of the ten restaurants found that some parts of the food procurement process – purchasing, receiving, pre-preparation and preparation – were more time-consuming using locally sourced products. Additionally, the survey found that chef commitment to local foods and skill in preparing those foods are an important part of successful use of these items. "Verbal commitment is not enough if restaurants want to maximize local food use," Sharma explains, "there must also be the ability to plan and prepare seasonal menus."

One of the areas that will be fine-tuned in future research is cost-comparison of locally- versus nationally-sourced foods. The researchers believe that transportation

costs for local producers were not factored into the purchase price, while national vendors usually will charge a transportation and delivery fee. Future research will track producers' total costs related to food sales to restaurants, including costs of delivery (gas, mileage, time) and value of dollars lost due to delayed payments. These will then be compared with total food procurement costs from national vendors to provide a more accurate assessment.

The producers who were interviewed saw some benefits and costs associated with selling to local restaurants versus other outlets such as direct sales to consumers at farmers' markets. Most of the producers thought that their selling prices to restaurants could be higher than they are, and most were interested in continuing to sell to restaurants.

One of the challenges to continued sales was development of purchase agreements and information on the needs of restaurants. Improved communication between producers and restaurants and more sophisticated decision-making tools are needed, the study found.

## Focus for future work

Future work will quantify the costs and return on costs of using local foods in restaurants. In addition, researchers hope to evaluate the decision-making process of restaurateurs, given supply and demand uncertainties. "We also anticipate further investigating the distribution aspects of local foods and continued process analysis of local food use from perspectives of producers and restaurant operators," Sharma said.

Initial efforts will continue with independently-owned restaurants because these outlets have greater purchasing and menu flexibility, but future efforts could expand to regional chains to identify the efficiencies of an established infrastructure.

[www.leopold.iastate.edu](http://www.leopold.iastate.edu)

**On-line crop calculator:**  
[www.iastatelocalfoods.org/calculator](http://www.iastatelocalfoods.org/calculator)

**On-line ISU Extension publications:**  
*Contracting with Food Services*  
[www.extension.iastate.edu/  
Publications/PM1853D.pdf](http://www.extension.iastate.edu/Publications/PM1853D.pdf)

*Economic Impact of Use in Restaurants*  
[www.extension.iastate.edu/  
Publications/PM1853E.pdf](http://www.extension.iastate.edu/Publications/PM1853E.pdf)

## Iowa State names two to Center advisory board

The 17-member Leopold Center Advisory Board has two new representatives from Iowa State University. Maynard Hogberg and Jack Payne replace long-time advisory board members Allen Trenkle, Distinguished Professor of Animal Science who had served on the board since 1989; and Wendy Wintersteen, Dean of the College of Agriculture and advisory board member since 1990. ISU's third slot on the advisory board is held by Paul Lasley, appointed in 2006. Lasley chairs the Sociology and Anthropology departments at ISU.

... animal agriculture provides an important link in developing long-term sustainable food production systems.

— Maynard Hogberg



I had some of Leopold's graduate students as my professors, so I like to think of myself as a third generation Leopoldian.

— Jack Payne



### ISU alum appointed

Hogberg chairs the ISU Department of Animal Science and brings to the board a long-standing interest in improving the sustainability of agriculture systems in the upper Midwest.

"I think I can bring the perspective of how animal agriculture provides an important link in developing long-term sustainable food production systems," Hogberg comments. As a member of the ISU Animal Science faculty since 2003, he has a wealth of experience gained during his tenure at Michigan State University, plus an Iowa perspective as a native of Red Oak. He also is a graduate of ISU, where he earned B.S., M.S. and doctorate degrees in animal nutrition.

Hogberg sees the Leopold Center as the nexus of various disciplines needed to approach sustainability. "The Leopold Center brings together a variety of disciplines and backgrounds to look at ag production systems that can evaluate how mainstream agriculture can improve its long-term sustainability." He adds, "There is a great opportunity to identify and prioritize issues with the Leopold Center."

Hogberg was chair of the Department of Animal Science at Michigan State from 1984 through 2002. His work has focused on swine extension, swine management, and applied research in swine nutrition and management.

After completing his bachelor's degree at ISU, Hogberg taught vocational agriculture for five years in Ida Grove in northwest Iowa.

### Leopold links to new member

Aldo Leopold provides the most important connection for Iowa State's other new board representative, Jack Payne. Payne is Vice President for Extension and Outreach at ISU and professor in the Natural Resource, Ecology and Management Department. His connections to Aldo Leopold and the Leopold Center were the topic of an article in the Spring, 2006 *Leopold Letter*.

"My graduate degrees are in wildlife management and Aldo Leopold has a special place in that discipline because he is considered the father of wildlife management," Payne explained in that article.

Payne came to ISU from Utah State University in Logan where he served as vice president for University Extension, director of the Utah Cooperative Extension Service, dean of continuing education, and was a tenured professor in the College of Natural Resources. He also served on the faculties of Texas A&M University and Pennsylvania State University, and spent ten years with Ducks Unlimited as their national director of conservation.

Payne's unique perspectives as a long-time student of Aldo Leopold's writings will bring a special perspective to his board work. "As a wildlife graduate student, I had some of Leopold's graduate students as my professors, so I like to think of myself as a third generation Leopoldian!"

Payne has a deep tie to the Leopold ethic. "Aldo Leopold to me personifies the understanding that those of us who love the land need to have. By that I mean that Leopold tied land (environment) to the human conscience."

"It is a real privilege for me to have this opportunity to serve on the board of the Leopold Center for Sustainable Agriculture," he said.

### Pirog becomes Center Associate Director

Rich Pirog is the new associate director of the Leopold Center. Pirog, who has been with the Center since 1990, was named associate director effective February 1.

"The Center has historically had one or more associate directors but has been without a person in this position since Mike Duffy left in June 2005," explained Leopold Center Director Jerry DeWitt. "After serving as director for a year, it became clear to me that it is important to have someone on staff to offer the administrative and programmatic support that an associate director is able to provide."

DeWitt praised Pirog for his leadership of the Center's successful Marketing and Food Systems Initiative and the Value Chain Partnerships project. Pirog will continue to manage both projects and provide direction in the Center's annual competitive grant process, conduct assessments on the impacts of Center programs and coordinate special research projects and the preparation of white papers.

Pirog joined the Center in 1990 as its first education coordinator, and became program leader for the Center's new marketing initiative in 2000. He is well-known nationally for his work on "food miles," including a 2001 research paper that outlined some of the environmental costs attached to transporting fresh produce hundreds of miles from farms to centralized distribution sites.

In 2004, Pirog received the ISU College of Agriculture's Professional and Scientific Staff Award for Achievement and Service. He also received the 2003 Sustainable Agriculture Achievement Award from Practical Farmers of Iowa, where he served as associate director in 2004. He has been a member of the Iowa Food Policy Council since 2000.

Pirog has a master's degree in agricultural meteorology from the University of Missouri and an undergraduate degree in earth science from Kean University in New Jersey.





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# Highlight Events

## Hear noted writer Wendell Berry at Iowa State

Nationally known farmer, writer, conservationist and philosopher Wendell Berry promises to tackle a host of contemporary agriculture issues on Sunday, April 15, at the Iowa State University Memorial Union in Ames. His rare public appearance is sponsored by the Leopold Center as part of its 20th anniversary observance.

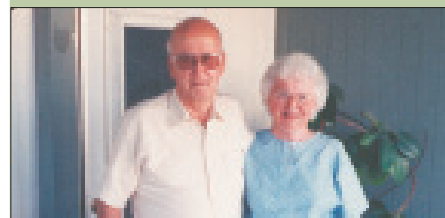
Berry will be joined by his daughter, Mary Berry Smith, who farms and has a vineyard in Harris County, Kentucky. The 7 p.m. event will feature a discussion moderated by Laura Jackson, Leopold Center board member and University of Northern Iowa biology professor, joined by two well-known Iowa organic farmers:

Francis Thicke of Fairfield and Laura Krouse of Mount Vernon, who also teaches biology at Cornell College.

Berry is a prolific poet, essayist and novelist and has taught English at New York University and the University of Kentucky. Central themes for his work include responsiveness to one's place, sustainable agriculture, appropriate technologies, healthy rural communities, reverence and the interconnectedness of life.

The annual Shivers Memorial Lecture in memory of John Shivers, who farmed near Knoxville, is cosponsored by Gamma Sigma Delta Honorary Society for Agriculture and the ISU Committee on Lectures.

## 2007 Spencer Award



The Leopold Center is seeking nominations for the 2007 Spencer Award, one of Iowa's largest awards in sustainable agriculture. Nominations are due April 27.

The Spencer Award for Sustainable Agriculture recognizes a farmer, researcher or educator who has made a significant contribution toward the stability of mainstream family farms in Iowa.

The award honors Woodbury County farmers Norman and Margaretha Spencer (shown above), and includes a \$1,000 cash gift.

More at: [www.leopold.iastate.edu/resources/spencer/spencer.htm](http://www.leopold.iastate.edu/resources/spencer/spencer.htm)